Chapter 7:
End of Trip Facilities

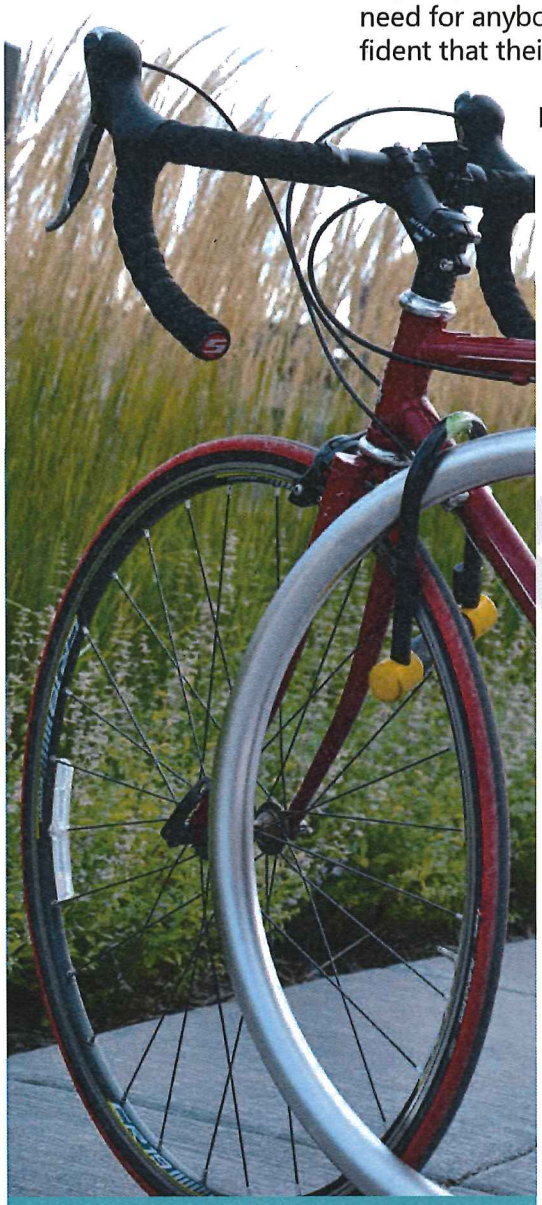
Saint Paul
Bicycle Plan

7.0 END OF TRIP FACILITIES

Ensuring adequate end-of-trip facilities, including bicycle parking, showers, changing rooms, and other amenities, is a critical part of creating an attractive bicycle transportation system. The presence or absence of these facilities will often play a substantial role in determining whether bicycling is viewed as a realistic transportation option.

7.1 Bike Parking

Bicycle parking is an important part of a functioning streetscape and is a basic need for anybody using a bicycle. At both ends of every trip, users must be confident that their bicycle can be stored in a safe location.



Bicycle Parking can be described as short-term or long-term. Short-term bicycle parking should emphasize convenience and ease of use for parking durations of less than two hours. Long-term bicycle parking should emphasize security and weather protection for durations of greater than two hours.

Criteria	Short-term	Long-term
Parking Duration	Less than two hours	More than two hours
Fixture types	Simple bicycle racks	Lockers, racks in a secured area
Weather protection	Typically unsheltered	Sheltered or enclosed
Security	Relies on user-provided bicycle locks and passive surveilance (e.g. eyes on the street)	**Unsupervised:**
		"Individual-secure" such as bicycle lockers
		"Shared-secure" such as a restricted access room
		Supervised:
		Staffed bicycle storage area
Location	May be inside or outside of the public right-of-way	Typically outside of the public right-of-way
Provider	May be privately owned or provided by the city or other partner agency.	Typically privately owned and located on private property.

SOURCE: Adapted from APBP Bicycle Parking Guidelines

Properly designed long-term bicycle parking almost always offers a superior level of security compared with short-term parking, and will typically be located outside the public right-of-way or on private property. However, it will often be located in access controlled areas and may not be available for use by visitors. Short-term bicycle parking, where feasible, may be provided on private property. However, much of the demand for short-term bicycle parking will be met by providing bicycle parking in the public right-of-way.

It is of critical importance to provide appropriate long-term bicycle parking within residential properties. While many residents in single-family homes have a garage that effectively serves this function, many residents of multi-family housing do not have a similar space to store a bicycle. Residents of multi-family housing should be provided a secure and sheltered long-term bicycle parking location that is separate from their private living space and does not require the bicycle to be carried on stairs or elevators.

It is desirable to ensure a sufficient quantity of bicycle parking to discourage people from locking bicycles to inappropriate objects, such as gas meters, trees, or hand rails; or in areas where the locked bicycle will impede movement, such as in front of doorways, pedestrian curb ramps, or at bus stops. By proactively providing bicycle parking in appropriate locations, the City can discourage bicycle parking in inappropriate locations. The city does not currently have any regulations establishing or defining illegal bicycle parking practices within the public right-of-way.

Action Item 7.1.1

Consider establishing an ordinance to regulate bicycle parking within the public right-of-way. The regulations should identify objects to which it is illegal to lock a bicycle, such as trees, gas meters, bus stop signs, etc.

The vast majority of bicycle parking owned by the city is short-term parking provided in the public right-of-way. The City does not operate any bike lockers, though some are available through partner agencies such as the Metropolitan Council on city-owned property.

City Zoning Code Bicycle Parking Requirements

Section 63.200 of the City zoning code establishes the bicycle parking requirements for all new construction and redevelopment throughout the city. The code establishes the minimum number of bicycle parking spaces required for a development, and provides guidance for where and how bicycle parking should be provided.

The code states that "the location of bicycle parking facilities shall be at least as convenient to the main entrance of the primary use as the most convenient third of the automobile

Short-term bike parking along Como Ave

parking." The code allows the required bicycle parking to be located within the public right-of-way with a permit from the city engineer. Bicycle parking must be provided a similar level of protection from weather as is provided for motor vehicle parking.

A summary of the current minimum bicycle parking requirements are as follows:

- **General:** one bicycle parking space for every 20 motor vehicle parking spaces
- **Residential:** one bicycle parking space for every 14 dwelling units
- **Allowed Substitution:** Bicycle parking spaces may be substituted for up to 10% of the required motor vehicle parking spaces. One motor vehicle parking space may be replaced by two bicycle lockers or four bicycle parking spaces.

The current zoning code does not specify whether the required bicycle parking is intended to function as short-term or long-term bicycle parking, and does not provide different guidelines for each type. In addition, the requirement for residential bicycle parking may not provide adequate bicycle parking. For non-residential properties, the number of required bicycle parking spaces is directly tied to the number of required motor vehicle parking spaces, which may not provide adequate bicycle parking facilities in locations such as along the Green Line LRT where required motorized parking may be reduced by 100 percent.

Action Item 7.1.2

Conduct a zoning study to evaluate revisions to the zoning code to differentiate between short-term and long-term bicycle parking, to evaluate minimum bicycle parking requirements for residential developments, and to consider strategies to ensure sufficient bicycle parking is provided along the Green Line LRT and future transit corridors.

Bicycle Parking in the Public Right-of-Way

Short-term bicycle parking should be located near the primary entrance to each destination. Often, locating bicycle

parking within the public right-of-way will provide the most convenient experience for bicycle users. Short-term bicycle parking in the public right-of-way is primarily provided in commercial areas to help people on bicycles easily access local businesses and workplaces. In most cases, this is accomplished through the installation of simple bicycle racks in the boulevard and furnishing zone of the sidewalk. Public Works has developed installation and spacing guidelines for bicycle parking in the public right-of-way.

In some locations, opportunities to locate bicycle parking in the boulevard are limited, though demand for bicycle parking may be high. In these cases, it may be appropriate to locate bicycle parking within the parking lane of a roadway, often called a "bike corral". Bike corrals will typically only be installed at the request of an adjacent property owner. The first bike corral in the city was installed in the fall of 2014.

Public Works maintains a database of bicycle rack locations throughout the city, though some of the data may be outdated or incomplete at the time of this writing. The database of bike racks is publicly available through the city online GISmo mapping tool.

Action Item 7.1.3

Complete a full inventory of bicycle parking within the public right-of-way and establish a procedure to update and publish the maps and inventory as appropriate.

The city continues to receive requests for additional bicycle parking within the public right-of way. In response, the City has developed a Neighborhood Bike Rack Program for the purpose of installing short-term bicycle parking. In 2014, this program was funded by a grant for the amount of $10,000. The number of requests for bicycle parking exceeded the available funding. No long term funding source has been identified to continue this program.

It is not well understood at this time where there is a need for additional bike parking in the public right-of-way, how much is needed, or how to prioritize future investments in bike parking.

Private bicycle rack in the public right-of-way on Raymond Ave

Short-term bicycle racks at the Union Depot Transit Center

Action Item 7.1.4

Conduct a study to identify where there exists a deficit of bike parking in commercial areas and create a proactive strategy and program to fund and install additional bike parking in high-demand areas.

The easiest and most cost effective opportunity to install bicycle parking in the public right-of-way is by performing the work at the same time as other work is being performed, such as street or sidewalk reconstruction. Many bicycle racks have been installed in the public right-of-way in the past as part of larger reconstruction efforts, however, the City has not consistently taken advantage of these opportunities due to a lack of established procedures.

Action Item 7.1.5

Establish a policy and procedure to install bicycle parking facilities in the public right-of-way in conjunction with all street or sidewalk construction or reconstruction projects. The quantity and placement of the bicycle parking should be consistent with existing or anticipated demand.

Bicycle Parking within Heritage Preservation Districts

The bicycle has played an important role throughout the history of transportation. Bicycles were popular and affordable before the automobile reached widespread use, enjoying an initial peak in popularity in the 1880's and 1890's, a time when much of Saint Paul was still developing. Special care must be taken to incorporate bicycle parking facilities into identified Heritage Preservation Districts in a thoughtful manner.

Action Item 7.1.5

Coordinate with the Heritage Preservation Commission and staff to identify appropriate short-term bicycle rack styles to be used within the public right-of-way in identified Heritage Preservation Districts.

Bicycle Parking at Transit Stations

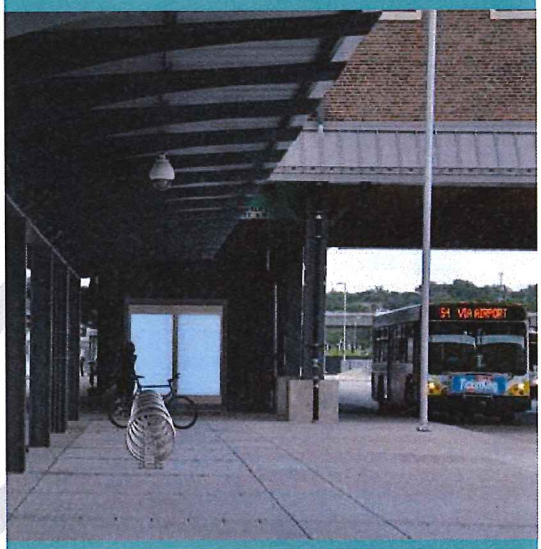
Improving bicycle access to transit stations and stops is a top priority to encourage multi-modal trips. Effective integration of bicycle parking and routes with transit facilities and routes will increase both bicycle use as well as transit ridership.

Bicycling can greatly expand the viability of using transit to complete a trip. While bicycling has the potential to expand the effective service area of a transit route, transit likewise expands the ability to use a bicycle for a portion of a trip. This is especially true for trips of sufficient length that bicycling alone is not a realistic option. The vast majority of buses and LRT vehicles operating in Saint Paul already permit transit users to bring bicycles onto the transit vehicles, giving people using bicycles the option of leaving their bicycle at the transit stop or station, or bringing their bicycle with them on the bus or LRT vehicle.

Provision of bicycle parking at transit stations and stops is a collaborative effort between the city and transit operators. For example, bicycle parking provided by Metro Transit is located at many of the Green Line LRT stations in a location of prime convenience for transit users. However, bicycle parking is frequently not provided at typical bus stop locations. In absence of bicycle parking at bus stops, however, transit users may lock a bicycle to a transit post sign or other object within the bus stop area that interferes with bus loading and unloading.

Action Item 7.1.6

Support transit agency partners in their efforts to provide high quality bicycle parking in and around transit stops and stations, much of which will be located within the public right-of-way. Integrate bicycle parking into station areas as possible at all new high-capacity transit stops and stations, including stops and stations along the arterial BRT routes, such as the "A Line," as well as other transitways such as the Gateway Corridor. Coordinate with transit agencies to ensure that adequate bicycle parking is provided at Park and Ride facilities in and near the city.



Sheltered bike parking at the Union Depot Transit Center

Bike tune up station on the Bruce Vento Trail at Lake Phalen

7.2 Showers, Lockers, and other Amenities

End-of-trip facilities such as changing rooms, showers, personal lockers, and self repair services (such as air pumps) are all important factors in determining whether individuals will choose to use a bicycle for transportation, especially for commuters who may need to maintain a professional appearance at work. An attractive and secure place to freshen up after breaking a sweat is a necessity for many potential bicycle commuters.

Employers should be encouraged to provide showers and other end-of-trip facilities for their employees. For many smaller businesses or developments, this will not be a realistic possibility. However, opportunities for multiple small businesses to share facilities can make it a more realistic possibility. In some cases, partnerships with nearby facilities (such as private gyms or fitness centers) may provide realistic opportunities for employers to provide this benefit to employees. In many cases, large employers or office developments will include showers in connection with other on-site fitness amenities.

There are currently no zoning code requirements regarding provision of changing rooms, showers, or other end-of-trip amenities.

Action Item 7.2.1

Conduct a zoning study to consider modifications to the zoning code that would require or encourage end-of-trip amenities as appropriate in new development, particularly in large office buildings.

Bicycle Tune-Up Stations

In the summer of 2014, five tune-up stations provided by private sponsors were installed at locations throughout Saint Paul. The tune-up stations provide air pumps to inflate tires as well as other basic tools to help bicyclists keep their bicycles in working order. Opportunities to expand the offering of tune-up stations should be explored.

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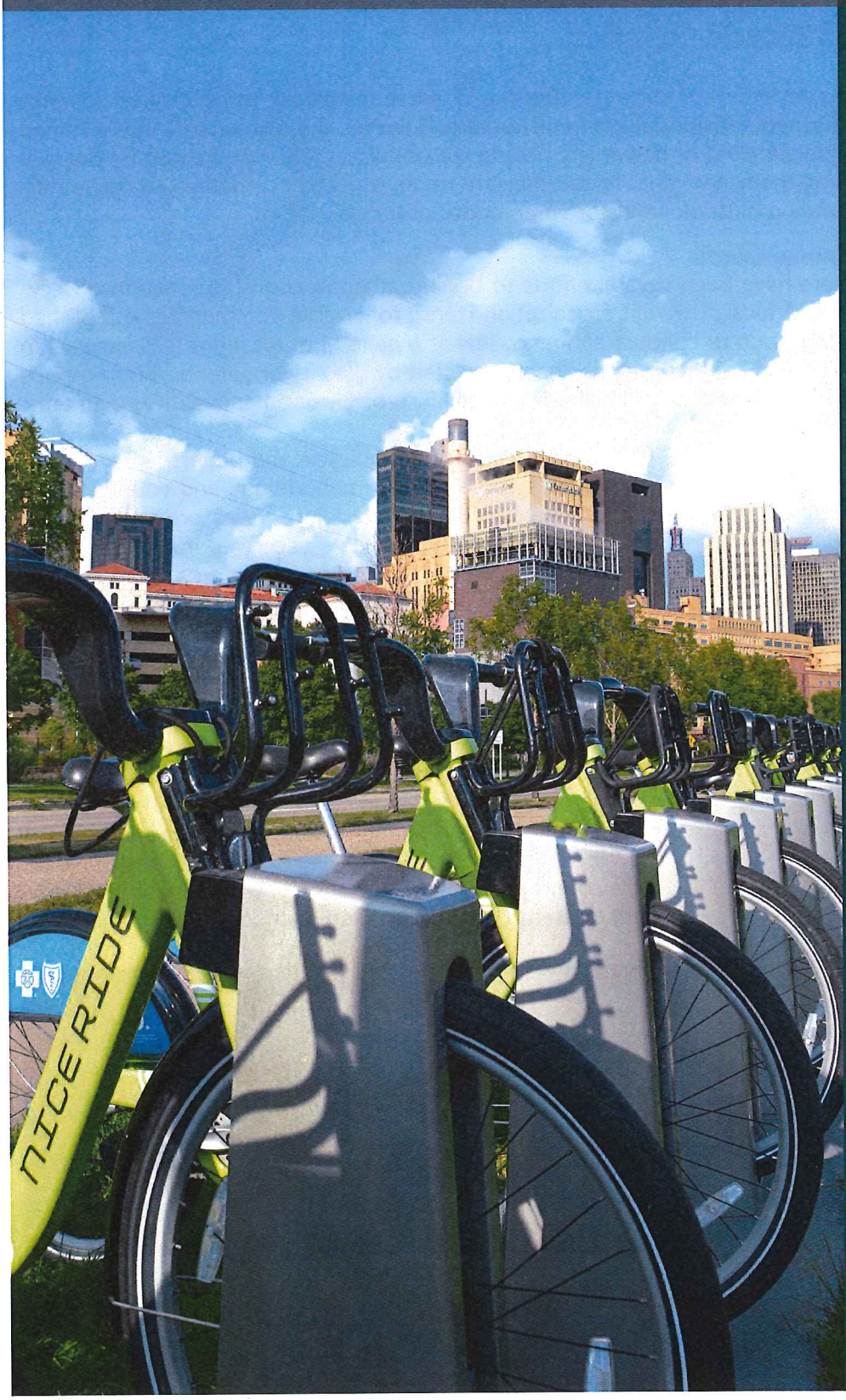
Chapter 8:
Bicycle Programs & Other Topics



Saint Paul
Bicycle Plan

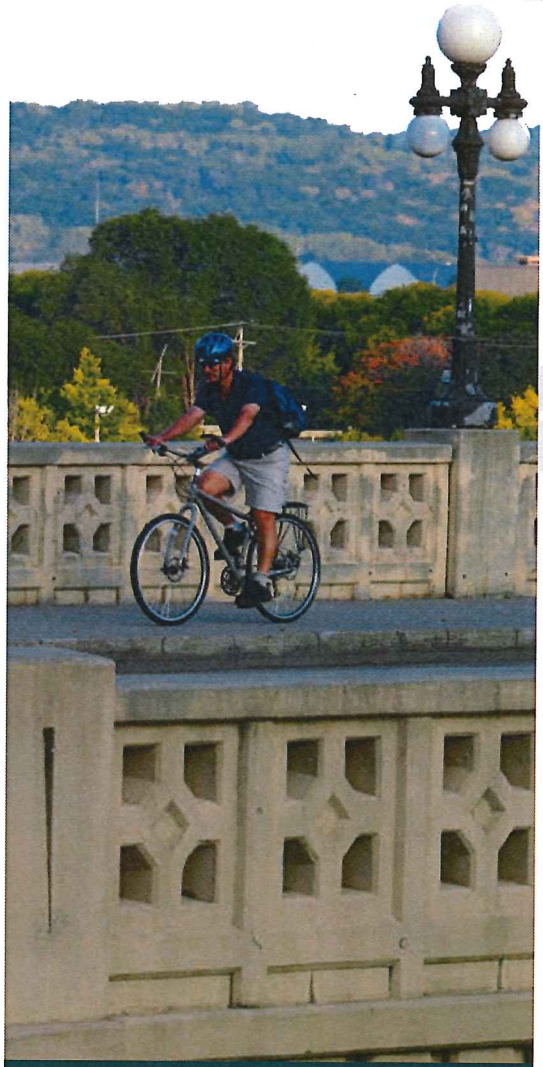
8.0 BICYCLE PROGRAMS & OTHER TOPICS

8.1 Bicycle Counting

It is important to understand how and where people are using bicycles to make informed decisions about infrastructure. However, the city currently has a limited understanding of how many people are using bicycles, how frequently they are using them, and what routes they are using, especially compared to our understanding of usage levels of other modes of transportation.

Manual Counts

There have been several efforts to begin gathering count information of bicyclists. A local nonprofit organization Transit for Livable Communities established a program to conduct annual counts at a handful of locations in Saint Paul in 2007. Other data has been collected by the city or neighborhood groups on an ad-hoc basis for specific projects or other initiatives over time.



In 2013, the city established a bicycle and pedestrian count initiative to establish a formal methodology and counting procedure. The counting methodology relies on volunteers to collect two hours of count data each year in early September, and is based on recommendations from MnDOT and the FHWA about bicycle counting methods. The methodology recommends that the counting effort be repeated annually. The count was repeated in 2014, though it is uncertain whether the city can sustain this effort on an annual basis.

The city frequently receives requests from individuals, developers, and neighborhood organizations for data regarding the number of bicycles using a particular route. The city does not currently have a clear method for cataloging and publishing bicycle count data. The results of the 2013 and 2014 bicycle counts are published on the city website, but more efficient or useful data presentation methods may be developed.

Action Item 8.1.1

Explore the feasibility of continuing the manual counting efforts on an annual basis. Consider partnerships with other groups and agencies that may be able to assist with volunteer recruitment, training, and organization. Establish a clear methodology for cataloguing, and publishing bicycle count data.

While the various volunteer-driven manual counting efforts have provided a good start to understanding bicycle traffic, manual counting efforts are labor intensive and may not be a sustainable approach over time to collecting data. In addition, the current methodology of collecting two hours count data one day each year provides merely a snapshot in time of bicycle usage. The current methodology does not provide an understanding of bicycle usage throughout the day, week, or year.

Automated Counts

Various methods to automate the collection of count data are rapidly emerging. Traditional technologies such as pneumatic tubes can be used to collect bicycle count data in some circumstances. In addition, new technologies such as thermal imaging or cameras may be an effective strategy. While automated counting procedures may not provide perfect counting accuracy, the ability to collect greater volumes of data over time is inherently valuable.

Action Item 8.1.2

Explore opportunities to automate the collection of bicycle and pedestrian count data. Document costs associated with automated counting as well as current best practices for ensuring accuracy. To the extent feasible, establish a methodology for collecting and publishing automated count data.

8.2 Wayfinding & Mapping

Wayfinding tools such as signage, pavement markings, maps, or electronic guidance can help make the city easier to navigate by bicycle, especially for new cyclists, or people using an unfamiliar route. The city publishes a map of the existing bicycle network and updates the map at least annually. In addition, various organizations such as advocacy groups have published bicycle network maps.

Several online wayfinding tools such as Google Maps directions and Cyclopath allow bicyclists with internet access to access route information and recommendations. However, these services provided by third parties may not have up-to-date information about the bicycle network, including information about temporary disruptions or detours to the network.

Wayfinding signage along Charles Ave

Nice Ride station at Lake Phalen

Action Item 8.2.1

Ensure the portability of electronic information about the bicycle network and provide third parties with easy access to the data.

However, the city should not assume that all persons using bicycles have access to electronic route information. Traditional wayfinding elements such as signage and pavement markings should be used to help bicyclists find destinations when the route is not clear or obvious. The existing wayfinding system should be enhanced and expanded, in accordance with the guidance included in the Saint Paul Street Design Manual. Coordination of wayfinding signage across route systems should be coordinate among the various managing agencies.

8.3 Nice Ride Minnesota

Nice Ride Minnesota is a nonprofit bicycle sharing system operating in the Twin Cities. The system was established in Minneapolis in 2010 and expanded into Saint Paul in 2011. The system currently boasts over 1,550 bikes and 170 stations in operation across the Twin Cities.

Bicycle sharing is often ideal for short distance point-to-point trips, especially spontaneous trips where users do not have their own personal bicycles with them, or when they would rather leave their bicycles at home. In many ways, bicycle sharing can be viewed as an extension of the transit network, with bicycling providing the last mile service of a combined trip with the light rail or bus service. The system is popular for both residents and tourists and is often one of the simplest ways to get around Saint Paul.

Users of Nice Ride are typically seeking a casual bicycling experience. The bicycles are designed to provide a comfortable upright seating position and are geared to provide easy pedaling, though that results in slower speeds than on more high-performance bicycles. As a result, users of Nice Ride are often drawn to bicycle facilities that provide the most comfortable user experience traveling at slower speeds. Users of Nice Ride will naturally be drawn to facilities such as off-street paths or cycle tracks that enhance the perception of safety and provide separation from motor vehicles.

While Nice Ride stations are typically located in the public right-of-way and must be coordinated and approved by the city, the station locations are typically selected by Nice Ride.

The current Nice Ride service area is focused around downtown and the central portions of the city bounded by University Avenue and Grand Avenue, though some stations exist on the city's West Side and as far north as Como Regional Park. However, the east side of Saint Paul is not currently served by Nice Ride.

Action Item 8.3.1

Coordinate with Nice Ride to encourage and facilitate the continued expansion of the system to portions of the city not currently served as well as the densification of the system throughout the city. Encourage coordination of station locations near substantial bicycle trip generators, transit facilities, and near the bicycle network. Support Nice Ride MN efforts to test new strategies and tools to encourage bicycle ridership.

8.4 Lighting

Ensuring that the bicycle network is well lit is critical to ensure the safety and usability of bicycles. This is especially true of off-street paths that pass through isolated areas and are not adjacent to roadways or buildings. The usability of poorly lit or unlit paths can be greatly diminished during overnight hours and much of the winter when daytime hours are reduced.

The city has a well established street lighting policy that guides how lighting is used along public rights-of-way. However, this policy is focused primarily on roadways lighting and does not provide clear guidance on lighting expectations for bicycle facilities that are not adjacent to roadways. In general, bikeways that are located in the street or immediately adjacent to the street do not require any additional lighting beyond what is provided according to the current street lighting policy.

When lighting bikeways, special care should be taken around

Lighting installed on the under construction Union Depot off-street path

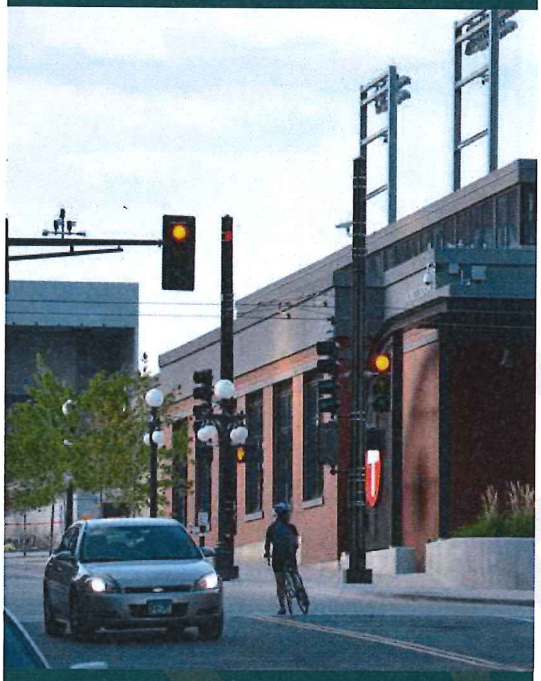
bridges, culverts, or other structures that may cast shadows or block other ambient light sources. Special care should also be given to appropriate lighting of bicycle and pedestrian bridges.

Action Item 8.4.1

Develop a policy to guide lighting of bikeways that are not adjacent to roadways, including lighting on bicycle and pedestrian bridges.

8.5 Traffic Signal Detection

Throughout the development of this plan, many bicyclists stressed the importance of ensuring that traffic signals throughout the city function appropriately for bicyclists. In many cases, traffic signals are programmed to detect the presence of bicyclists, motorists, or pedestrians to trigger a green light for bicyclists. In some cases, if a traffic signal is not capable of detecting the presence of a bicycle, bicyclists must wait through a long traffic signal cycle, even if there is no opposing traffic. In in other cases, the bicyclist will never receive a green light if they are not detected. Traffic signals that do not efficiently accommodate bicyclists may result in an increased rate of bicyclists illegally running red lights.



Bicyclist waiting for a traffic signal in Lowertown

Minnesota State Statute 169.06 subd. 9 permits bicyclists to enter an intersection against a red light provided that:

- The bicycle has been brought to a complete stop
- The signal shows a red light for an unreasonable time
- The signal is malfunctioning or is not capable of detecting bicyclists
- No motor vehicle or person is approaching on the street or is far enough from the intersection that it does not constitute an immediate hazard.

There are various methods and technologies that can be used to detect bicyclists. Active detection methods require bicyclists take an action, such as push a button, to be detected. This may be appropriate in locations such as where a low traffic volume bicycle boulevard crosses a busy arterial. In these cases, the push button should be placed in a location where bicyclists are able to easily reach the button without dismounting.

Passive detection methods such as induction loops or cameras do not require the bicyclists to take an action to be detected, though they may still require a bicyclists to stop at a specific location in the roadway. In these cases, a pavement marking may be used to indicate where bicyclists should position themselves.

Bicyclist detection is not necessary in some situations, such as when the traffic signal operates on a fixed cycle and phasing pattern. In addition, detection may not be necessary on higher-volume roadways where the signal is already programmed to prioritize the heavy through traffic volumes.

Action Item 8.5.1

Consider bicyclist detection at all signalized intersections on the bicycle network and as part of all new signal installations.

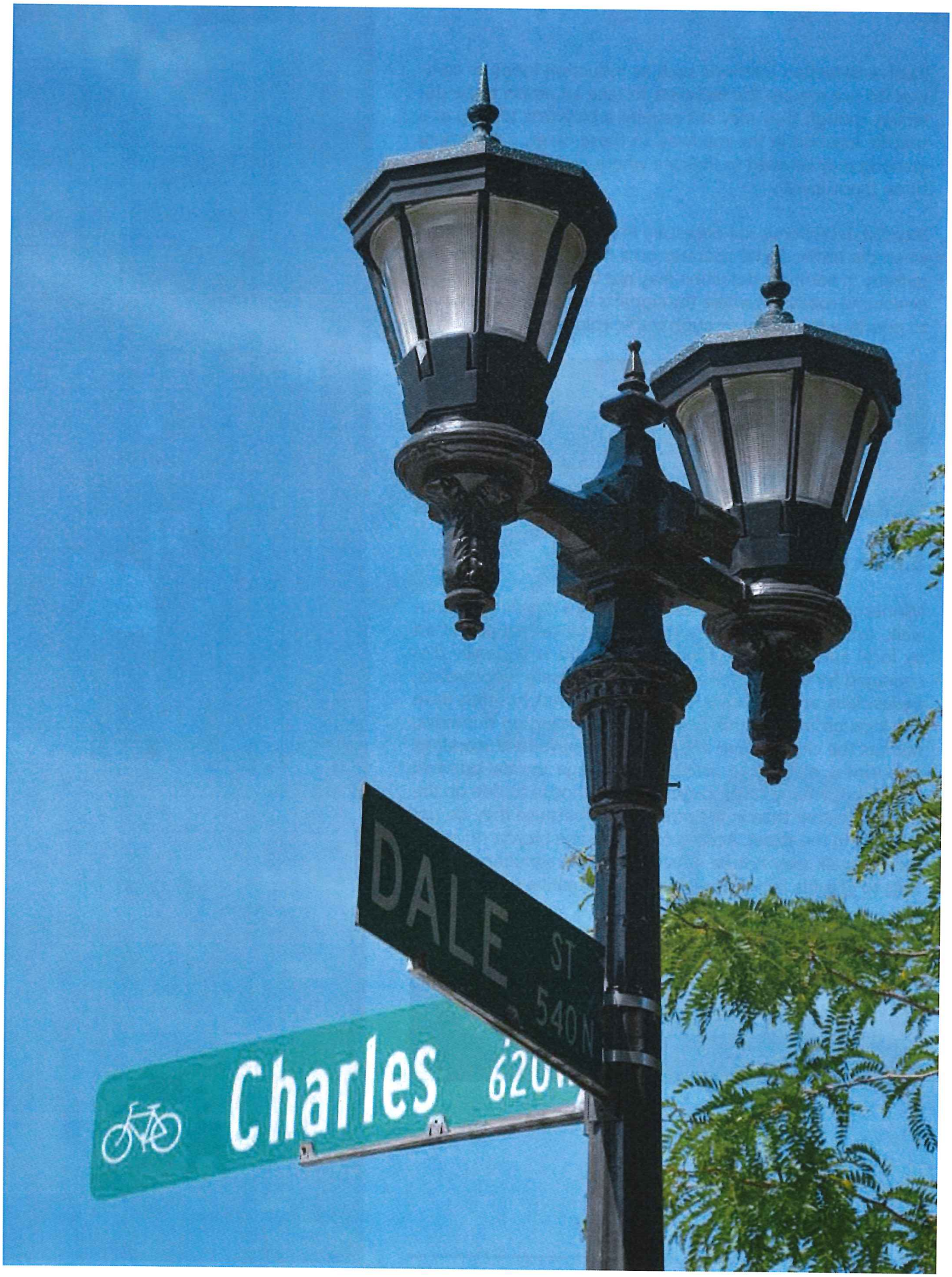
8.6 Bicycling on Sidewalks

Minnesota Statute 169.222 permits riding a bicycle on a sidewalk, except for within a business district unless permitted by local authorities. Bicycling on sidewalks is generally discouraged for adult bicyclists, and can be unsafe for bicyclists, pedestrians, and motorists. Saint Paul does not currently have any local ordinances that govern bicycle riding on sidewalks, nor has the city installed any signage or pavement markings in business districts to actively discourage unsafe sidewalk bicycling. In many cases, bicyclists who choose to ride on the sidewalk rather than in the street do so because they do not feel safe in the street. Actions to discourage bicycle riding on the sidewalk may not be effective without simultaneous efforts to provide bicyclists with a safe alternative space to ride.

Action Item 8.6.1

Consider developing a policy regarding signage or pavement markings to discourage bicyclists from riding on sidewalks in business districts.

Bicyclists riding on the sidewalk in downtown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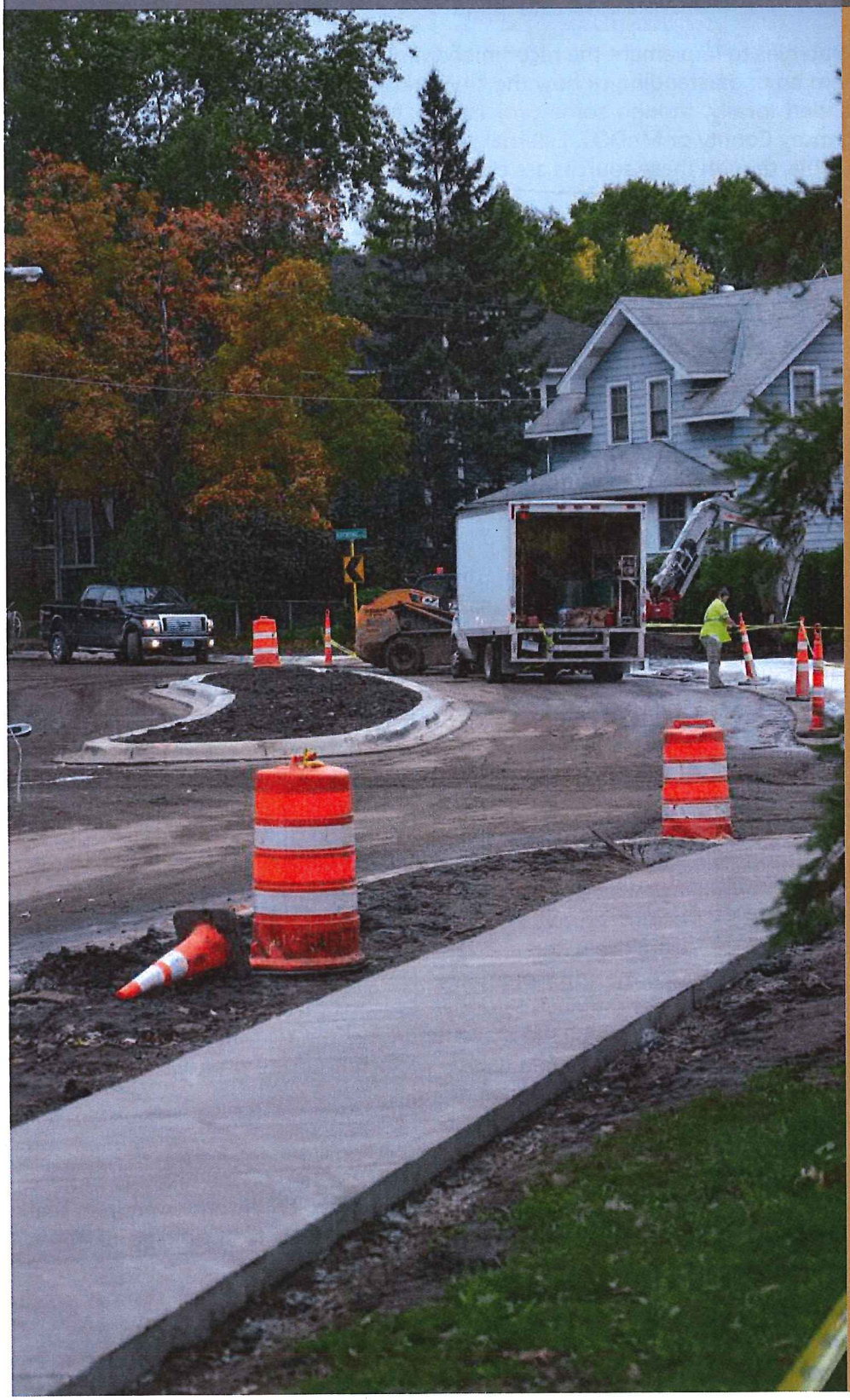
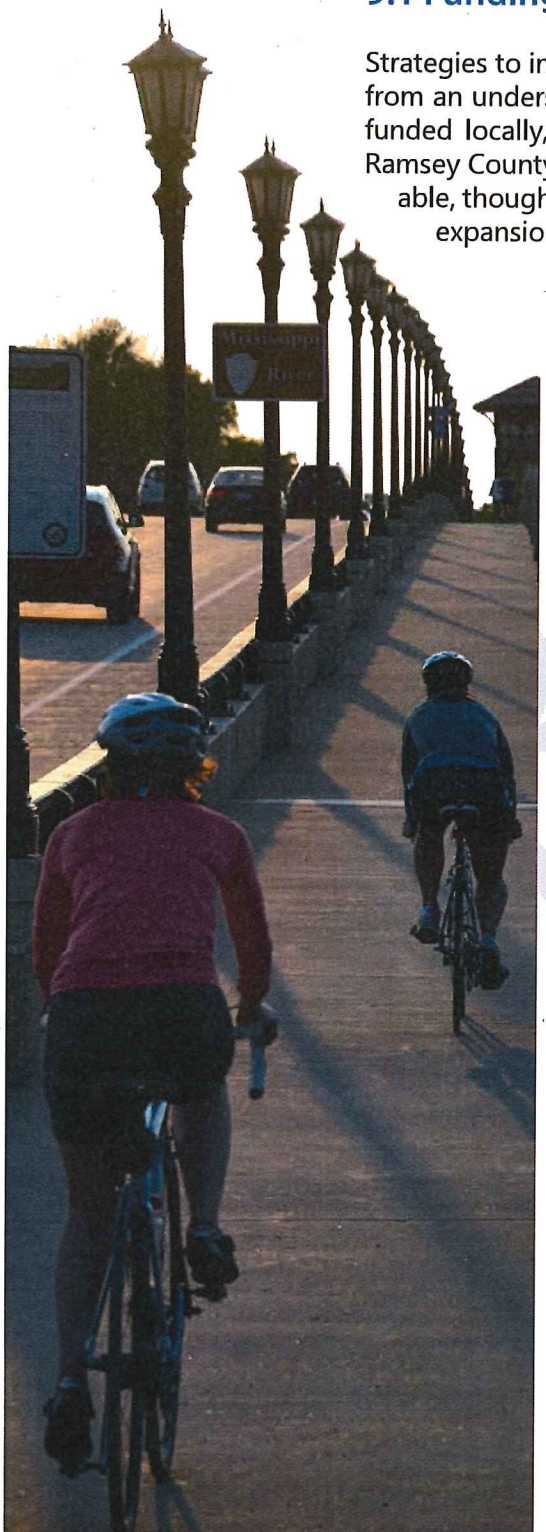
Chapter 9:
Implementation



Saint Paul
Bicycle Plan

9.0 IMPLEMENTATION

9.1 Funding Network Expansion



Saint Paul Bicycle Plan

Strategies to implement the recommendations of this plan must necessarily flow from an understanding of how the city funds capital projects. Most projects are funded locally, though some projects are funded by agency partners such as Ramsey County or MnDOT. External state or federal grant sources are also available, though these sources are often not a predictable way to plan for network expansion.

Many of the bikeways recommended in this plan will be funded and developed as independent projects, though there may be some opportunity to bundle several similar projects together in a single funding request. In addition, much of the bicycle network will be funded through routine maintenance or reconstruction efforts. Bicycle network capital projects may be managed by either the Department of Public Works or the Department of Parks and Recreation, and are channeled through the city's Capital Improvement Budget (CIB) process for financing and implementation.

Capital Improvement Budget

The City maintains a two-year Capital Improvement Budget (CIB) that outlines all capital expenditures anticipated for the upcoming two-year period. The CIB is overseen by the CIB Committee, a citizen's committee comprised of 18 city residents appointed by the Mayor and approved by the City Council. The CIB is created through what is commonly referred to as the "CIB process," in which all city capital projects compete with each other for funding.

On a bi-annual basis, city departments (such as Public Works or Parks and Recreation) as well as community organizations submit proposals for capital funding. These proposals are evaluated and ranked by several citizen-based task forces of the CIB Committee. Next, the CIB Committee prepares a recommended budget, which is reviewed, modified, and approved by the Mayor and City Council. Generally, only a small portion of the capital projects that are proposed will be selected to receive funding.

Every bicycle capital project will be proposed and funded through this process, either as a standalone bikeway project, or as part of a larger capital project. This includes projects that are successful at receiving state or federal funding to aid in

implementation and require additional matching local funds, which will be identified through the CIB process.

Bicycle, Pedestrian, and Traffic Safety Program

Included within the CIB is the annually funded Bicycle, Pedestrian, and Traffic Safety Program, designed to fund safety improvements at various locations throughout the city. The program is intentionally flexible to fund safety improvements such as pavement markings, signs, pedestrian countdown timers, audible pedestrian signals, pedestrian ramps, traffic calming elements, dynamic speed display signs, and other elements.

While limited in scope by its funding appropriation ($252,000 in 2014), the program remains an important local funding source for bicycle infrastructure. However, it is not intended in scope to be the primary source of funding for expanding the bicycle network. Rather, it is intended to fund miscellaneous small-scale pedestrian and bicycle improvements that would not otherwise be funded.

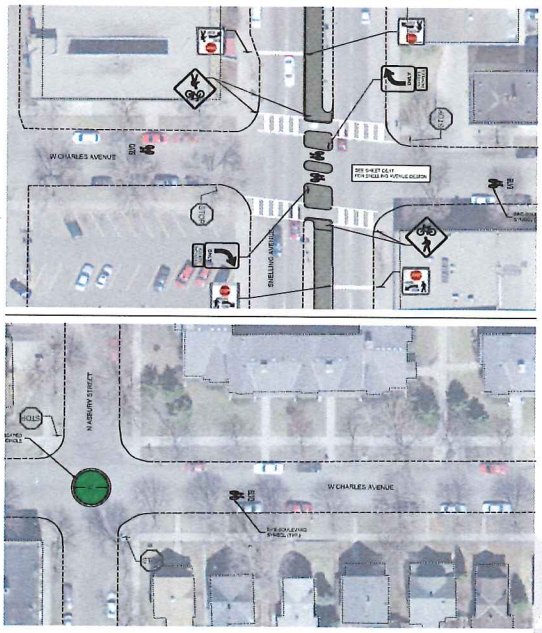
External Grants

The city will seek external funding sources as much as possible to implement the bicycle network, though the application process is often quite competitive. Typical grant sources include trail funding sources administered through the DNR and federal transportation grants administered by the Metropolitan Council. A full list of funding sources is presented in **Appendix F**.

Each funding source is unique and often comes with very specific requirements regarding eligible expenses. Often the qualifying or selection criteria for each funding source will determine the type of bikeway project that is likely to be successful at receiving funding.

The city will be best positioned to compete for external grants by completing the Phase 1: Planning portion of the Bikeway Development Process to demonstrate public support for the project and to be well-prepared to complete the applications.

The Charles Ave Bicycle Boulevard received an external grant for project planning and development



Approved design concept for the Charles Ave bicycle boulevard

9.2 Bikeway Development Process

This plan strives to create a consistent, careful, and systematic approach to implementing elements of the bicycle network. The intent of this approach is to minimize the timeline required to secure funding for the project, to facilitate the development of effective bicycle infrastructure in a cost-effective manner, and to better position the city to compete for external funding sources for bikeway implementation.

The project development approach can be described in four phases:

- Phase 1: Planning
- Phase 2: Develop Implementation Strategy
- Phase 3: Final Design & Implementation
- Phase 4: Evaluation & Maintenance

This document establishes a long-term vision for the development of a bicycle network throughout the city. However, there are still many details that remain to be determined for each corridor identified in this plan. This process is intended to help city staff and residents understand how and when these details are determined.

This process is not intended to be rigid or to discourage neighborhoods or staff from employing unique or new strategies of public involvement or planning. It is understood that each neighborhood will require a unique planning approach and that unanticipated opportunities for implementation may present themselves that should be seized.

In some cases, bikeways may be implemented quickly and easily without changing the operational characteristics of a roadway. This is particularly true of roadways identified for enhanced shared lane type bikeways that rely on shared lane markings or signage alone to establish the bikeway. In these cases, a formal planning or public involvement process may not be necessary and the bikeway may be implemented immediately upon identification of funding.

Phase 1: Planning

The purpose of this phase is to establish the long-term vision and preferred design for full build-out of a bikeway. It is increasingly becoming a reality of local, state, and federal funding sources that city staff and residents must have completed a substantial amount of initial planning and public engagement in advance of applying for external funding. The

purpose of this phase is not to discourage the city or neighborhoods from seeking funding without completing initial planning or public involvement efforts if there is a compelling reason to do so. Rather it is to better position those projects to be successful at receiving funding either external to the city or through the city CIB process.

Initial planning efforts for development of new bikeways or improvements to existing bikeways may be led either by city staff or neighborhood groups in collaboration with city staff. The end result of this phase should be an understanding of the existing conditions, a vision of the desired bikeway, and what improvements are required to realize the preferred design. This phase should also establish a concept level construction cost estimate for the bikeway.

The planning phase should include coordination with entities such as the Transportation Committee of the Planning Commission, the Heritage Preservation Commission, the Parks & Recreation Commission, and other stakeholder groups. Where projects require coordination with Ramsey County, MnDOT, Metro Transit, the DNR, or other agency, representatives from these agencies should be included in project planning as early as possible in the process.

At a minimum, the planning phase should include the following:

- Collection of relevant data such as street widths, motorized and non-motorized traffic volumes, right-of-way width, existing conditions, crash history
- Identification of objectives
- Identification of long-term vision
- Initial public engagement effort
- Development of design alternatives
- Identification of a preferred design
- Development of concept level cost estimate

Phase 2: Develop Implementation Strategy

The second phase is the process of matching the identified preferred design with a funding source or implementation opportunity. Funding for infrastructure projects is often a combination of several different sources, and each source will bring with it certain expectations and limitations. In some cases, the full project may need to be constructed in several construction phases over time, and each phase may be constructed using a different funding source.

Bike lanes on Raymond Ave are being implemented in several construction phases

Construction of the Griggs Ave Bicycle Boulevard

This phase of the process should:

- Identify short-term and long-term opportunities
- Identify short-term and long-term priorities
- Evaluate potential for bundling bikeway implementation with other opportunities (such as upcoming routine roadway maintenance or planned reconstruction)
- Identify internal and external funding opportunities and timelines
- Apply for funding of full or partial project implementation
- Secure funding

In many cases, this will become an iterative process. If funding is secured to implement only a portion of the preferred design, the elements of the preferred design that remain unfunded will continue in Phase 2 until funding can be identified.

Phase 3: Final Design and Implementation

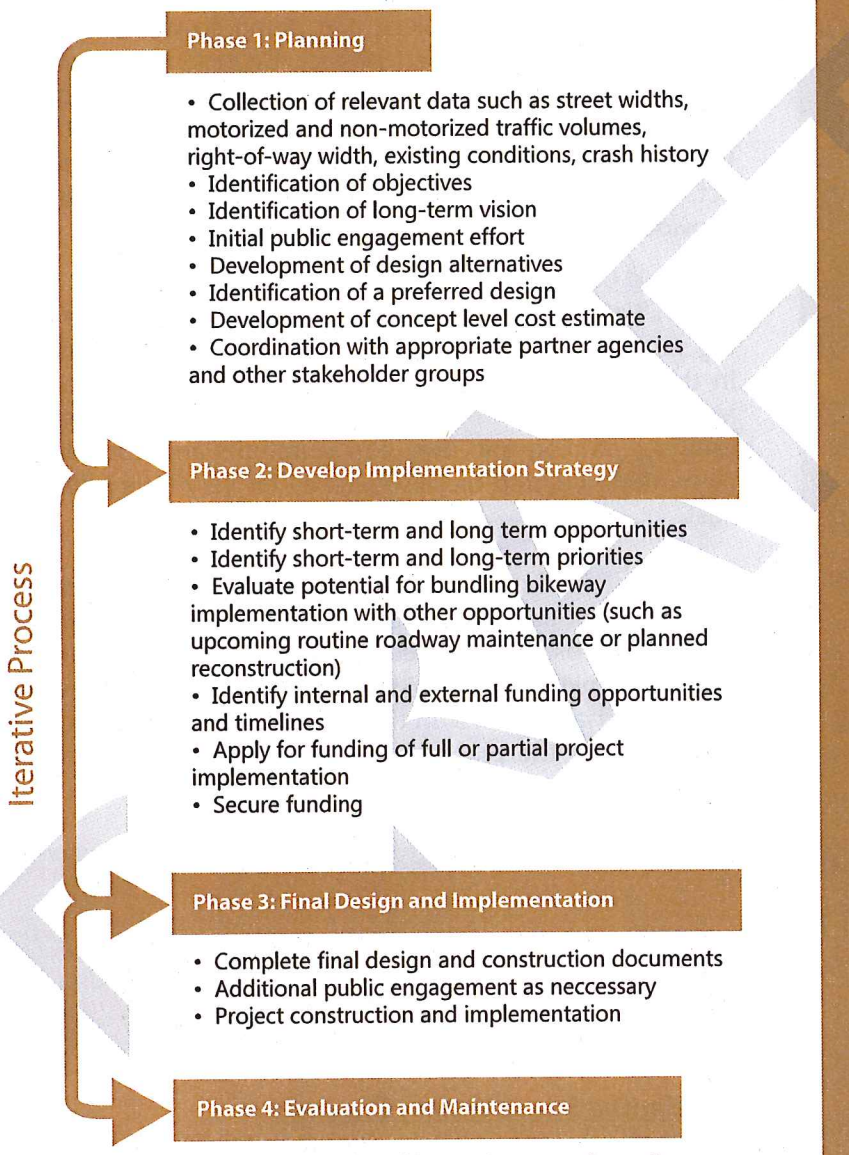
After funding has been secured to implement a preferred design, final design and construction documents will be completed by city staff and the project will be implemented. Construction may be performed by city staff or a private contractor, depending on the project scope and other factors. In most cases, this phase should also include a public involvement and notification effort consistent with the level of anticipated impacts. In some cases, educational or marketing materials may be needed to provide information to bicyclists, motorists, residents, and other stakeholders about new or unfamiliar designs.

Phase 4: Evaluation and Maintenance

After a bikeway has been implemented, it should continue to be evaluated and monitored to ensure that the design is performing as intended and to identify any unforeseen challenges or possible future improvements. This phase is continuous as the city should always be monitoring and evaluating existing infrastructure. At a minimum this phase includes the following:

- Monitor crash and usage data to evaluate the effectiveness of the facility
- Perform routine maintenance on the bikeway and evaluate the effectiveness of maintenance operations
- Evaluate the need for additional modifications or upgrades to the facility

Bikeway Development Process



Bike lanes on Jackson St following the mill and overlay process

9.3 Implementation Opportunities

The most fiscally efficient way to implement bicycle facilities is by implementing the bikeway as part of a larger construction or maintenance project, and doing so will often result in a better overall finished project. By including bicycle elements into other projects with a larger scope, the cost of implementing the bikeway is absorbed into the budget of the larger project, often at little additional cost to the larger project. The following is a list of common capital projects that can provide the means for implementing bikeways.

Mill and Overlay

The mill and overlay process involves grinding off the existing surface of the roadway and replacing it with new asphalt. In this process, the existing roadway striping and markings are removed, presenting an opportunity to re-evaluate the previous striping and lane configurations and consider implementing painted bicycle facilities for very little additional cost.

Implementing bicycle facilities through a mill and overlay process is not always possible. In some cases, implementing the planned bikeway will require additional work beyond the scope of a mill and overlay, such as roadway widening or significant signal revisions. In these cases, it will not be possible to implement the planned bikeway without identifying additional funding.

Action Item 9.3.1

Incorporate implementation of bikeways with routine maintenance projects whenever possible.

Residential Street Vitality Program

The Residential Street Vitality Program (RSVP) is a local street reconstruction program designed to coordinate and implement public and private utilities, street paving, lighting, and landscaping improvements. Typically, only local residential streets are included in the RSVP program. The RSVP program presents a cost effective opportunity to construct bikeways and traffic calming elements on local streets, especially bicycle boulevard facilities. RSVP projects include a full reconstruction of the roadway and curbs, allowing for the implementation of traffic calming elements at little additional cost.

Action Item 9.3.2

Incorporate implementation of bikeways with RSVP projects.

Arterial and Collector Reconstruction

Full reconstruction of arterial or collector roadways presents the most cost-effective opportunity to implement all types of bikeway facilities, including end-of-trip facilities such as bicycle parking. In a full reconstruction, the existing roadway is removed and replaced, including all curbs. Full reconstruction also typically includes replacement or repair of sidewalks, driveway aprons, lighting, trees, and other streetscape elements. This process provides an opportunity to reevaluate elements such as street width, parking availability, sidewalks, off-street paths, lane configurations, and signal locations. Often, the cost of including bicycle facilities in a full reconstruction project is minimal.

Action Item 9.3.3

Incorporate implementation of bikeways with full reconstruction projects.

9.4 Improving Existing Bikeways

Much of this plan focuses on expanding the bicycle network and the construction of new facilities. It is important to remember the need to continuously evaluate and improve existing bikeways. Improvements to existing bikeways may be needed in response to field observations about how the facility is operating, an analysis of crash history, in response to public complaints, or other reasons. Implementing improvements to existing facilities must proceed through the same funding processes as implementing new infrastructure.

Bike lanes were implemented on Raymond Ave following a full street reconstruction in 2014

"The development of a network of bicycle facilities in the downtown core is the top priority for encouraging bicycle ridership and economic development in Saint Paul."

- Saint Paul Bicycle Plan

9.5 Bicycle Network Prioritization Principles

Full implementation of this plan will take many years to complete, elevating the importance of developing a process to prioritize investment. Throughout the public involvement process that helped develop this plan, several important themes emerged that established the two top priorities

Priority 1: Develop a Downtown Bicycle Network

The development of a network of bicycle facilities in the downtown core is the top priority for encouraging bicycle ridership and economic development in Saint Paul. Statements received from city residents throughout the development of this plan repeatedly mentioned the challenges associated with circulating throughout downtown and as well as the challenged associated with entering and exiting downtown on a bicycle.

The planned reconstruction of Jackson Street through downtown in 2016 will implement bicycle facilities on this portion of the street. A separate study will finalize recommendations for additional alignments throughout downtown. The next critical step is to identify funding for implementation of the remaining facilities throughout downtown.

Priority 2: Complete the Grand Round

Completing the Grand Round will impact neighborhoods throughout Saint Paul and encourage longer distance bicycle trips. The Grand Round prioritizes off-street paths and in-street bike lanes to appeal to a wide range of users. The Grand Round is well-positioned to provide significant transportation and recreation opportunities. Progress will be made on completing portions of the Grand Round throughout 2015 and 2016, however some sections of the Grand Round will remain unfinished. The next critical step is to identify funding for implementation of the remaining sections of the Grand Round.

Prioritizing Other Bikeways

Prioritization of the remaining bikeways throughout the city is a complex process with many variables and is not easily quantified. At this stage in the development of the bicycle network, opportunities that offer swift and cost effective implementation may rise to the top of the list. Opportunities to improve existing bikeways should be prioritized alongside opportunities to expand the bicycle network. The following principles are provided to aid in the decision making process:

Connectivity

- Prioritize projects that address a gap in the existing bikeway network.
- Prioritize projects that extend the network to a significant destination that is not currently served.
- Prioritize the major bikeway network over the minor bikeway network to establish a basic network citywide.

Safety

- Prioritize projects that address locations with a significant history of crashes or reported near misses involving bicycles.
- Prioritize projects that address conflicts with other modes, including pedestrians.
- Prioritize projects where the current condition or configuration of existing facilities discourages usage.

Usage

- Prioritize projects that connect to significant destinations or destination clusters.
- Prioritize projects that connect to large numbers of current riders.
- Prioritize projects that connect to areas of high population or employment density.
- Prioritize projects with substantial community support.
- Prioritize projects anticipated to serve both transportation and recreational purposes.

Equity

- Prioritize projects in areas with a higher percentage of minority populations, low income residents, or households without access to an automobile.
- Prioritize projects that address areas of the city where there has historically been less investment in bikeways.

Cost Effectiveness

- Prioritize projects that offer the most improvement over existing conditions at the lowest cost.
- Prioritize projects that will most effectively leverage external funding.

Bicycle and pedestrian refuge islands on Lexington Pkwy aim to minimize conflicts with motor vehicles

Griggs bicycle boulevard under construction

9.6 Planning Level Cost Estimate

Planning level cost estimates were developed for the recommendations in this plan based on general assumptions about the various bicycle facility types outlined in this plan. For each facility, a planning-level cost estimate per linear mile was developed using cost information based on past project implementation experience. The cost of each segment will vary greatly based on a range of local factors unique to each project. Detailed cost estimates will be developed as part of the Bikeway Development Process for each project.

Implementation Costs

Off-Street Path

This cost estimate assumes a 10-foot wide asphalt trail, no right-of-way acquisition required, and no modifications to adjacent roadways. Typical installation includes trail construction, replacement of curb ramps, modification to traffic signals or other intersection controls, utility relocation, and landscaping.

In-street Separated Lane

This cost estimate assumes implementation will be limited only to pavement markings and signage. In some cases, roadway widening will be required, but these facilities are likely to be implemented as part of a larger roadway reconstruction project rather than as an independent bikeway project. Therefore, those costs are not identified here. Typical installation includes striping, pavement markings, and signage.

Bicycle Boulevard

Typical implementation includes installation of identification and wayfinding signage, arterial crossing treatments, and traffic calming elements. The arterial crossing treatments are often the most costly element of bicycle boulevard development, and the details and costs of these crossings are also challenging to anticipate without detailed study. Cost estimates are based on previous local experience developing bicycle boulevards as well as cost estimates from other agencies.

Enhanced Shared Lane

Typical implementation includes adding pavement markings and signage to an existing street.

Bikeway Facility Type	Existing Facilities	Planned Facilities	Implementation Cost	Planned Facilities Implementation Cost
	(miles)	(miles)	(per mile)	(total)
Off-Street Paths	74	56	$ 1,500,000	$ 84,000,233
In-Street Separated Lanes	53	60	$ 30,000	$ 1,799,387
Bicycle Boulevards	7	39	$ 500,000	$ 19,339,245
Enhanced Shared Lanes	18	40	$ 21,000	$ 849,193
TOTAL	**153**	**195**		**$ 105,988,057**

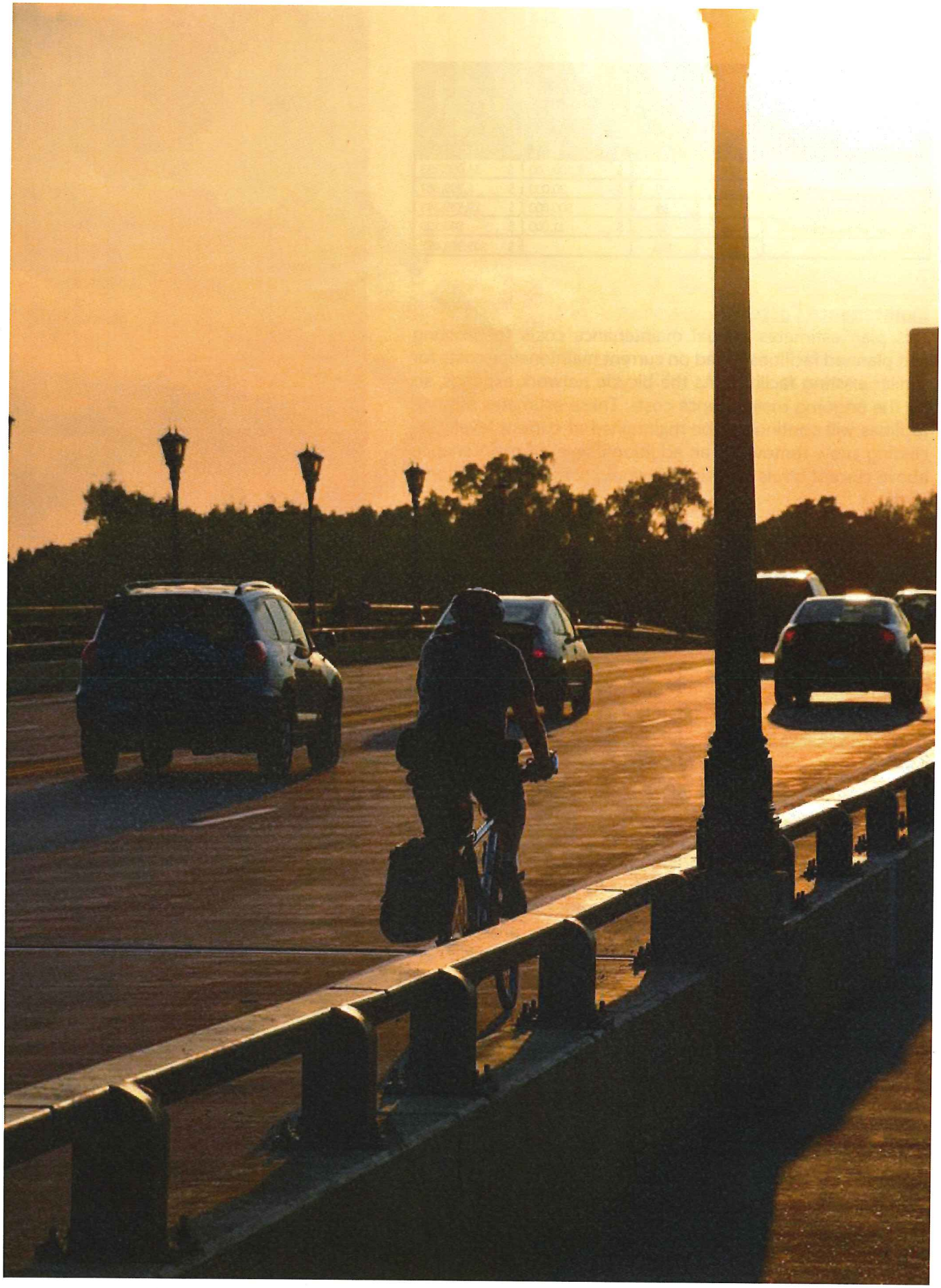
Maintenance Costs

This plan estimates annual maintenance costs for existing and planned facilities based on current maintenance costs for similar existing facilities. As the bicycle network expands, so do the ongoing maintenance costs. These estimates assume facilities will continue to be maintained at current levels, including snow removal. If an additional level of maintenance above current levels is desired, it would come with additional costs.

Bikeway Facility Type	Existing Facilities	Planned Facilities	Annual Maintenance Cost	Existing Facilities Annual Maintenance Cost	Planned Facilities Annual Maintenance Cost	Full Network Annual Maintenance Cost
	(miles)	(miles)	(per mile)	(total)	(total)	(total)
Off-Street Paths	74	56	$ 12,000	$ 886,728	$ 672,002	$ 1,558,730
In-Street Separated Lanes	53	60	$ 8,000	$ 426,266	$ 479,836	$ 906,102
Bicycle Boulevards	7	39	$ 16,000	$ 114,710	$ 618,856	$ 733,565
Enhanced Shared Lanes	18	40	$ 6,000	$ 109,899	$ 242,627	$ 352,526
TOTAL	**153**	**195**		**$ 1,537,603**	**$ 2,013,321**	**$ 3,550,923**

Bicycle Parking Costs

The cost to install common bike racks in the public right-of-way can vary greatly depending on how much site preparation work needs to be completed. City policy requires that bicycle parking be installed on a concrete pad (rather than the grass in the boulevard or where pavers are present). Where a concrete pad is already in place, a new bicycle rack can be purchased and installed for approximately $215 each. If a concrete pad must be installed, the additional costs can range between $400 and several thousand dollars, depending on local circumstances.



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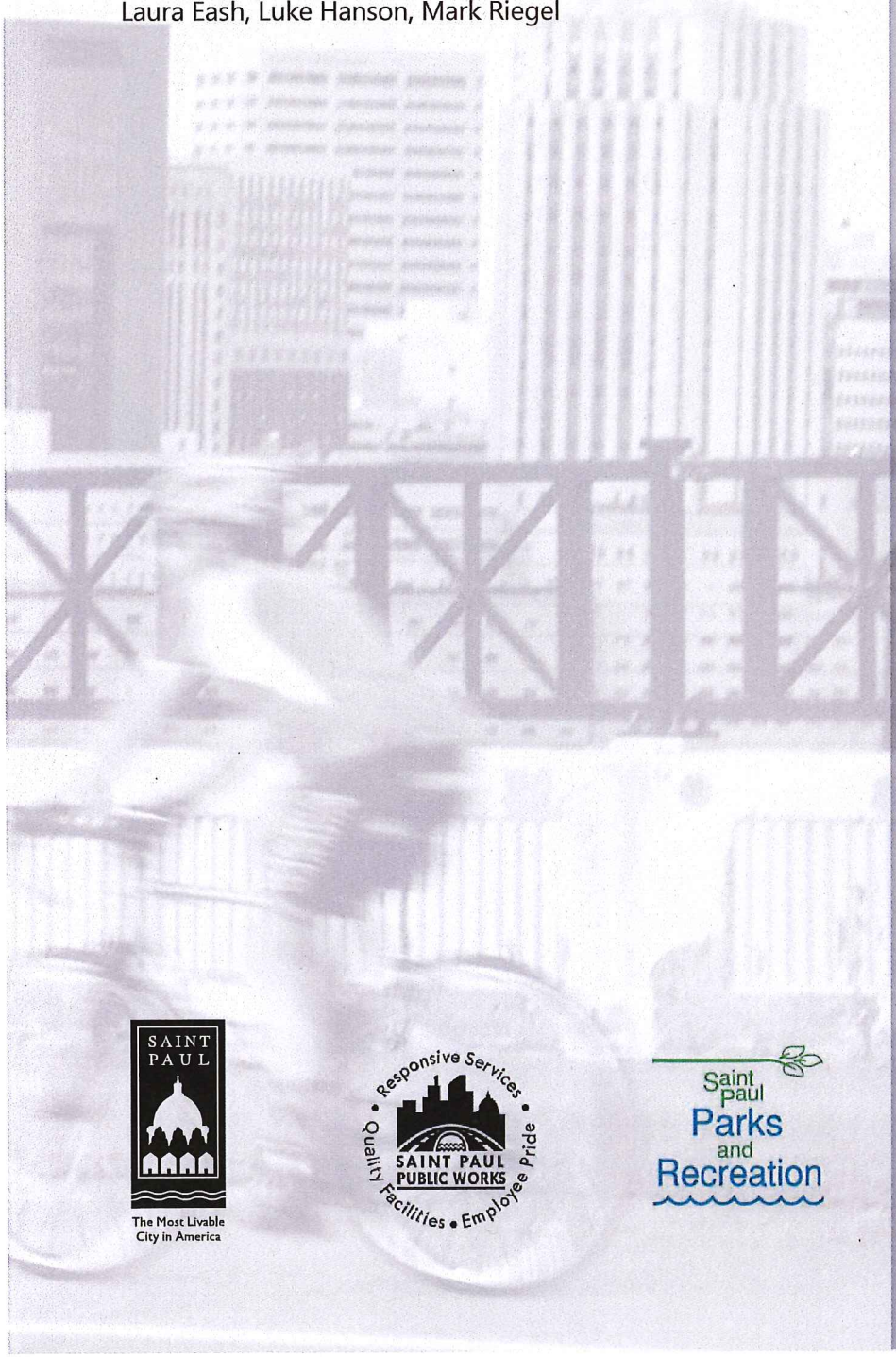
Laura Eash, Luke Hanson, Mark Riegel



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